SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS
AND INTERNATIONAL RELATIONS
Christopher Shays, Connecticut
Chairman
Room B-372 Rayburn Building
Washington, D.C. 20515
Tel: 202 225-2548
Fax: 202 225-2382

February 19, 2004

MEMORANDUM

To: Members of the Subcommittee on National Security, Emerging Threats and International Relations

From: Dr. R. Nicholas Palarino, Senior Policy Analyst, and Mr. Robert Briggs, Analyst

Subject: Briefing memorandum for the hearing *Combating Terrorism: Chemical Plant Security.* The hearing is scheduled for Monday, February 23, 2004, at 9:30 a.m. in the Moon Township Municipal Building, 1000 Beaver Grade Road, Moon Township, PA 15108.

PURPOSE OF THE HEARING

The hearing will examine voluntary actions the chemical industry has taken to address security preparedness and challenges the industry faces protecting facility assets and operations from terrorist attacks.

HEARING ISSUES

1. **What actions are being taken to address security preparedness at chemical facilities?**

2. **What challenges confront the federal government and the chemical industry in protecting facilities from a terrorist attack?**

BACKGROUND

Chemical facilities are those manufacturing or storing a host of products—including basic organic chemicals, plastic materials and resins, petrochemicals, and industrial gases. Other locations fitting into this category include fertilizer and pesticide plants, pulp and paper manufacturers, water facilities, and refineries, all housing large quantities of chemicals. Facilities producing, processing, handling, or storing such substances are regulated by local ordinances, state regulations and federal laws, including the Clean Air Act.
(Web Resource 1, GAO Report, page 6)

According to the Environmental Protection Agency (EPA), approximately 15,000 facilities in a variety of industries produce, use, or store one or more hazardous chemicals beyond threshold amounts[1]. An incident, whether of accidental or intentional origin, at one of the larger facilities could have catastrophic consequences. **(Web Resource 1, GAO Report, page 7)**

Some chemical facilities may be at a higher risk of a terrorist attack if they contain large amounts of toxic chemicals and are located near population centers. Attacks on such facilities could harm a large number of people, with health effects ranging from mild irritation to death. Additionally, there could be large-scale evacuations, and disruption of the local or regional economy.

There is no specific data available on what the consequences would be of a successful terrorist attack on a chemical facility. However, facilities with large amounts of hazardous chemicals are required to submit estimates to the EPA as

[1]EPA has identified 140 toxic and flammable chemicals that, when present above certain threshold amounts, would pose a risk to human health and the environment if released into the atmosphere. Source: Environmental Protection Agency, RMP Series Fact Sheet, "The General Duty Clause" and Title 40 Code of Federal Regulations Part 68.

part of the risk management program (RMP). Specifically, the facilities are required to estimate the potential consequences if chemical fumes are accidentally released into the atmosphere.
(Web Resource 1, GAO Report, page 9)

These estimates include the possible effects on residential populations located in a vulnerable zone.[2] According to EPA, 123 chemical facilities located throughout the nation have toxic worst-case scenarios in which more than one million people would be in a vulnerable zone and could be at risk of exposure to a cloud of toxic gas. Disasters at about 600 facilities could endanger between 100,000 and 1,000,000 people, and at about 2,300 facilities could endanger between 10,000 and 100,000 people. **(Web Resource 1, GAO Report, page 10)**

Bhopal, India

There is an empirical example of a chemical accident, and the effect the release of toxic gasses had on the surrounding population. In the early hours of December 3, 1984, gas leaked from a tank of methyl isocyanate (MIC)[3] at a pesticide plant in Bhopal, India. The plant was owned and operated by Union Carbide India Limited (UCIL). The state government of Madhya Pradesh in India reported the Bhopal accident killed over 3,800 persons; 400 people experienced permanent total disability, and 2,680 persons experienced permanent partial disability. **(Web Resource 2)**

Terrorism

Potential terrorist acts against chemical facilities are classified into two categories: direct attacks on facilities or chemicals on site, or efforts to use business contacts, facilities, and materials (e.g., letterhead, telephones, computers, etc.) to acquire harmful materials. In either case, terrorists may be employee saboteurs or outsiders, acting alone or in collaboration with others.
(Web Resource 3, CRS Report, page 2)

In the case of a direct attack, traditional or nontraditional weapons may be employed, including explosives, incendiary devices, firearms, airplanes, computer

[2] Vulnerable zones are determined by drawing a circle around a facility with the radius of the circle equal to the distance a toxic gas cloud would travel before dissipating to relatively harmless levels.
[3] A crystalline compound, C_2H_3NS, used as a pesticide.

programs, or weapons of mass destruction (nuclear, radiological, chemical, or biological). **(Web Resource 3, CRS Report, page 2)**

In obtaining chemicals, a terrorist's intent may be the use of a chemical as a weapon, including but not limited to explosives, incendiaries, poisons, and caustics. Access to chemicals might be gained by physically entering a facility and stealing supplies, or by using legitimate or fraudulent credentials (e.g., company stationary, order forms, computers, telephones or other resources) to order, receive, or distribute chemicals. **(Web Resource 3, CRS Report, page 2)**

Plant Security

Currently, there is no comprehensive assessment of facilities that house chemicals. According to a 1999 study by the Agency for Toxic Substances and Disease Registry (ATSDR)[4], security at chemical plants in two communities with large concentrations of chemical facilities was fair to very poor. ATSDR observed security vulnerabilities such as freely accessible chemical barge terminals and chemical rail cars parked near residential areas in communities where plants are located. **(Web Resources 4)**

Furthermore, during a limited review of chemical industry vulnerabilities conducted before September 11, 2001, the Department of Justice (DoJ) found security at 11 chemical facilities was comparable to security found at other industrial facilities. According to DoJ, some facilities needed to implement more effective security systems and develop alternative means to reduce the potential consequences of a successful attack. **(Web Resource 3, CRS Report, page 11)**

The effectiveness of security at some facilities may also be in doubt as evidenced by several media accounts of reporters and environmental activists gaining access to chemical facilities. In April 2003, a *Pittsburgh Tribune-Review* investigative reporter, Mr. Carl Pine, focused attention on security at chemical facilities. Mr. Pine visited numerous chemical facilities and stated he had virtually unfettered access to stockpiles of toxins and explosives. CBS reporter Steve Kroft and CNN correspondent Jeanne Merserve also reported that security was lax and concluded no one agency was in charge of requiring facilities to address the threat from terrorism. **(Attachment 1)**

[4] ATSDR is an office of the Department of Health and Human Services, and is directed by Congressional mandate to perform specific functions concerning the effect on public health of hazardous substances in the environment.

EPCRA and CAA

Two key federal laws require or encourage certain chemical facility operators to reduce risks to the general public associated with releases of hazardous chemicals: the Emergency Response and Community Right-to-Know Act of 1986 (EPCRA) and the Clean Air Act, which was amended in 1990 (CAA). Both focus on accidental releases of hazardous chemicals. **(Web Resource 3, CRS Report, page 13)**

EPCRA mandated the establishment of State Emergency Response Commissions (SERCs) and Local Emergency Response Committees (LEPCs) to coordinate planning and response to potentially large releases of specified extremely hazardous substances. The Act requires facility operators, LEPCs, and SERCs to prepare contingency plans for such releases. **(Web Resource 3, CRS Report, page 13)**

The Clean Air Act (CAA) mandates EPA oversight of facilities that handle more than specified threshold quantities of hazardous substances. The Act defined hazardous substances to include chlorine, anhydrous ammonia, methyl chloride, ethylene oxide, vinyl chloride, methyl isocyanate, hydrogen cyanide, ammonia, hydrogen sulfide, toluene diisocyanate, phosgene, bromine, anhydrous sulfur dioxide, sulfur trioxide, and 100 other chemicals. EPA was directed to designate chemicals posing the greatest risks to human health or to the environment, based on three criteria: severity of potential acute adverse health effects, the likelihood of accidental releases, and the potential magnitude of human exposure. EPA promulgated a list of 77 acutely toxic substances, 63 flammable gases and volatile flammable liquids, and high explosive substances. **(Web Resource 3, CRS Report, page 14)**

The CAA Section 112(r) imposes a general duty on owners and operators of facilities producing, processing, handling or storing any extremely hazardous substance to detect and prevent or minimize accidental releases and to provide prompt emergency response to a release in order to protect human health and the environment. The act requires owners and operators of covered facilities to prepare Risk Management Plans (RMPs) that summarize the potential threat of sudden, large releases of certain chemicals, including the results of off-site consequence analysis (OCA) for a worst-case chemical accident, and facilities plans to prevent releases and mitigate any damage. **(Web Resource 3, CRS Report, page 16)**

Prior to September 11, 2001, much of the information about chemical plants was on the Internet, accessible to the public. Early in October 2001, EPA removed from the Internet general information about risk management plans—for example, information about the physical state and concentrations of chemicals at facilities and the duration of a possible chemical release—which previously had been considered acceptable for Internet posting. **(Web Resource 3, CRS Report, page 19)**

After September 11, 2001, EPA also advised pesticide companies and applicators to be especially vigilant about physical security of chemicals and equipment. The Agency issued a chemical safety alert tailored to the security needs of the pesticide industry. **(Web Resource 3, CRS Report, page 19)**

Homeland Security Strategies

A federal interagency working group chaired by the Office of Homeland Security was convened to consider security needs at chemical facilities and to develop procedures for assessing and reducing terrorist risks. According to news reports, the plan is nearly complete, but some details remain at issue. **(Attachment 2)** In February 2003, the Office of Homeland Security issued the *National Strategy for the Physical Protection of Critical Infrastructures and Key Assets*, which further defines the goals and objectives to secure infrastructures. Chemical facilities are a part of that infrastructure. **(Web Resource 3, CRS Report, page 19)**

With respect to the chemical industry, the strategy acknowledges both the potential economic consequences of a successful attack on the chemical sector and the potential threat to public health and safety. The strategy notes there is currently no clear, unambiguous legal or regulatory authority at the federal level to help ensure comprehensive, uniform security standards for chemical facilities. In particular the strategy observes that federal laws may be out-of-date and no longer effective for monitoring and controlling access to dangerous substances. **(Web Resource 3, CRS Report, page 20)**

The President proposes that the Department of Homeland Security (DHS), in concert with EPA, work with Congress to enact legislation to require certain chemical facilities, particularly those that maintain large quantities of hazardous

chemicals in close proximity to population centers, undertake vulnerability assessments and take reasonable steps to reduce identified vulnerabilities. The strategy also proposes EPA, in concert with DHS, review current laws and regulations pertaining to the distribution and sale of highly toxic pesticides and industrial chemicals. **(Web Resource 3, CRS Report, page 20)**

Industry Self-Regulation

The chemical industry has taken steps to secure their facilities. The American Chemistry Council (ACC, formerly the Chemical Manufacturers Association), the Chlorine Institute, Inc., and the Synthetic Organic Chemical Manufacturers Association have all issued security guidelines for their members. For example, 180 corporate ACC members are required to evaluate site security using vulnerability assessment methodology.
(Web Resource 1, GAO Report, page 23)

ACC members begin the process by assessing security, including computer security, at high-risk facilities, as well as from supplier to manufacturer, to wholesaler, to retailer, and finally to customer. After needed security measures have been put into place, the ACC requires verification of the assessment by an independent third party. **(Web Resource 1, GAO Report, page 25)** In addition to developing guidelines and a management code on site security, ACC and other chemical trade organizations have been communicating extensively with one another and with government officials about how to reduce the risk of chemical terrorism. **(Web Resource 1, GAO Report, page 26)**

According to the EPA, RMP data show the largest quantities of the most dangerous chemicals are located at facilities using chemicals, not at facilities manufacturing chemicals. These facilities include agricultural suppliers, such as fertilizer facilities; petroleum and natural gas facilities; food storage facilities; water treatment facilities; and wastewater treatment facilities.
(Web Resource 1, GAO Report, page 27)

In addition, other facilities housing hazardous chemicals listed under the RMP regulations are not subject to RMP requirements because the quantities are below threshold amounts. These facilities could be at risk from terrorist attacks.

Some of these other facilities also have security initiatives underway. For example:

- The Fertilizer Institute, which represents fertilizer manufacturers as well as fertilizer retail and distribution facilities, developed a security code modeled after the ACC code. The code encourages facilities to develop vulnerability assessments and implement a plan based on the assessments. In addition, a security vulnerability methodology for agricultural retail facilities will be developed to assist this sector of the fertilizer industry.

- The American Petroleum Institute, which represents petroleum and natural gas facilities, published security guidelines developed in collaboration with the Department of Energy that are tailored to the differing security needs of industry sectors, such as oil and gas exploration, refining, transportation, and distribution.

- The International Institute of Ammonia Refrigeration, which represents facilities such as food storage warehouses using ammonia refrigeration, developed site security guidelines and provided information about security resources to its member facilities.

- The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 requires, among other things, all community water systems serving more than 3,300 customers certify to EPA they have conducted an assessment of vulnerabilities to terrorist attacks. According to EPA, about 2,000 of these community water systems are also RMP facilities.

Security Challenges

Despite these steps, industry officials note they need better threat information from law enforcement agencies, as well as better coordination among agencies providing threat information. **(Web Resource 1, GAO Report, page 28)**

Other Challenges:

1) According to industry officials, chemical companies face a challenge in achieving cost-effective security solutions, noting companies must weigh the cost of implementing countermeasures against the perceived reduction in risk.

2) Facilities face pressure from public interest groups to implement inherently safer practices (referred to in the industry as inherently safer

technologies), such as lowering toxic chemical inventories and redesigning sites to reduce risks.

3) Industry officials voiced concern about the ability of government agencies' to protect sensitive information relating to facility vulnerabilities and security.

4) Finally, officials stated the industry faces a challenge in engaging all chemical facilities in voluntary security efforts. Officials expressed concern that smaller chemical companies may not be taking as much action as larger companies to address vulnerabilities. **(Web Resource 1, GAO Report, page 28 - 29)**

DISCUSSION OF HEARING ISSUES

1. What actions are being taken to address security preparedness at chemical facilities?

While the American Chemistry Council's (ACC) efforts are commendable, its member facilities comprise only about 7 percent of the facilities required to submit risk management plans to the EPA. There are approximately 14,000 other facilities that manufacture, produce, use, or store chemicals in quantities that require compliance with EPA's RMP program.

The Clean Air Act requires facilities with substantial amounts of hazardous chemicals to produce an RMP. This plan is designed to recognize hazards and prevent accidents. The plan requires facilities using listed toxic or flammable chemicals above certain thresholds to develop hazard assessments, emergency response and prevention program information to the public. The plan is not designed to address the security measures needed to prevent an attack from terrorists.

The Executive Branch directed DHS, in concert with EPA, to work with Congress and enact legislation requiring chemical facilities undertake vulnerability assessments and take steps to reduce identified vulnerabilities. DHS, the agency with designated responsibility to protect the homeland from a terrorist attack, has no direct regulatory jurisdiction over the chemical industry.

Two legislative proposals in the 108th Congress attempt to enhance chemical site security. S. 994 and H.R. 2901 would authorize DHS to oversee security assessments and planning at selected chemical facilities. The DHS Secretary would be directed to require facilities to conduct vulnerability assessments, identify hazards, and prepare security plans to reduce vulnerability to a terrorist attack. H.R 2901 would also require high-priority facilities to submit assessments and plans to DHS. These types of proposals would go a long way to assist industry in the identification of regulatory requirements and also designate a lead agency to oversee chemical facility security preparations.

Chemical industries, especially the trade associations, have taken the most concrete actions to reduce the risk of a terrorist attack against a chemical facility. These associations have done this with little or no guidance from the Executive Branch or Congress. However, as the General Accounting Office points out there is no way to assess the extent of facility security preparations. There are no established standards against which to measure security preparedness and no single agency in charge of developing or applying standards to the chemical industry.

2. What challenges does the federal government and the chemical industry face protecting facilities from a terrorist attack?

The federal government faces several major challenges protecting facilities from a terrorist attack. First, intelligence about terrorists targeting a specific facility will be difficult to gather. Consequently, the government should conduct a vulnerability assessment to determine which facilities are most likely to be targets. To date, those vulnerability assessments have not been completed. And, there remains the conflict between those who claim a public right to know chemical plan vulnerabilities and plans and those who want to keep that information from appearing on open-source media like the Internet.

Second, there should be one agency in charge. Now it is not at all clear that DHS has the necessary statutory authority to require anything of chemical plan operators or distributors. EPA has some authority with regard to safety and security to prevent accidental spills and exposures, but does not have expertise in emergency management requirements or planning. Nevertheless, any major chemical release –whether accidental or intentionally caused – would be an environmental event. DHS would in most scenarios call in EPA for assistance. Although there should be some coordination between the DHS and EPA concerning regulatory requirements

for the chemical industry, one agency should have a clearer mandate to oversee industry preparations.

The chemical industry faces two major challenges. Industry must weigh the cost of establishing security measures against the perceived reduction in risk. This reduction in risk is difficult to measure. Additionally, the industry has thousands of plants and locations. Some will adhere and institute improved security measures, some will partially adhere to the measures, and some will disregard the requirements. There are thousands of facilities with which to be concerned. The field should be narrowed, and those presenting the most concern should be given the most help to protect the facility.

WITNESS TESTIMONY

Witnesses will discuss the nature of the threat to chemical facilities, federal programs to mitigate and respond to the threat, industry actions to address facility vulnerabilities to terrorism and federal, state and local government coordination on chemical plant security matters.

Panel One

Mr. Michael Lowder, Operations Branch Chief, Response Division, U.S. Department of Homeland Security, FEMA

Chief Robert Full, Chief, Allegheny County Department of Emergency Services

Mr. Thomas W. Headley, Vice-Chairman, Forward Township, Board of Supervisors

Mr. Dave Sanko, Director, Pennsylvania Emergency Management Agency (PEMA)

Panel Two

Mr. John Stephenson, Director of Natural Resources and Environment, U.S. General Accounting Office

Ms. Pamela Witmer, President, Pennsylvania Chemical Industry Council

Mr. Marty Durbin, Team Leader - Security & Operations, Senior Director – Federal Relations, American Chemistry Council

Jennifer C. Gibson, Vice President, Government & Public Affairs, National Association of Chemical Distributors

Attachments

1. *The Washington Times*, "Fixes for Flawed Fences," November 22, 2003, p. A9.

2. *The Washington Post*, "Chemical Plants Feared as Targets," December 16, 2001, p. A1.

Web Resources

1. *United States General Accounting Office, Report to Congressional Requestors,* "Homeland Security: Voluntary Initiatives are Under Way at Chemical Facilities, but the Extent of Security Preparedness is Unknown," GAO-03-349, March 2003
   http://www.gao.gov/

2. Union Carbide Aid and Relief efforts,
   http://www.bhopal.com/review.htm.

3. *Congressional Research Report for Congress*, Chemical Plant Security, RL31530, October 27, 2003,
   http://www.ncseonline.org/nle/crsreports/03Feb/RL31530.

4. ATSDR "Industrial Chemicals and Terrorism: Human Health Threat Analysis, Mitigation and Prevention."
   http://www.techstuff.com/terror/terror.htm